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COMPLETE SPECIFICATION.

Improvements in Artificial Legs.

I, OLE PETER RASMUSSEN POLD, of 100 Adelgade, Copenhagen, Denmark, Boot & Shoe Manufacturer. do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

- 5 This invention relates to artificial legs and is distinguished by its lightness and the flexibility of its joints. It is also free from any projections which might cause rapid wear of the trowsers.
- I will now describe my invention with reference to the accompanying drawings in which:—
- 10 Fig. 1:—shows an elevation of the leg in vertical section
 Fig. 2:—shows a side elevation of the leg partly in section and in a bent position.
 Fig. 3:—shows an enlarged view of part of the mechanism.
 Fig. 4:—shows a horizontal section taken at the line A—B of Fig. 3.
 15 Fig. 5:—shows an arrangement which enables the leg to be lengthened at the lower part.
- 1:—is the leather cover of the upper part of the leg.
 2:—are the pivot joints.
 3:—is the calf or lower part of the leg.
 20 4:—is the bar with the hook 5 at its lower end.
 5:—is the hook at the lower end of the bar 4.
 6:—is a bar connected to the lower part of the leg.
 7:—is a hook on the bar 6.
 8:—is a spiral spring inside the lower part of the leg.
 25 9:—is a leather strap connecting the spring 8 to the upper part of the leg.
 10:—is an eye catch or similar fitting.
 11:—is the foot of the leg
 12:—is the metal cross plate of the foot action.
 13:—is a group of four bolts shewn in Fig. 4 placed one on each arm of the
 30 cross.
 14:—is the action plate for the bolts.
 15 and 16:—are spiral springs around the bolts.
 17:—are the nuts of the bolts.
 18:—is a mushroom headed stud supporting the india rubber disc 19.
 35 19:—is an india rubber disc underneath the plate 14.
 20:—are screws for joining the cross 12 to the foot.
 21:—is the leather cover around the foot 11.
 22:—is the angular cut in the toe-joint.
 23:—are 2 spiral springs in the angular cut 22.
 40 24:—are angular bars for connecting the plate 14 to the calf or lower part of the leg 3.
 25:—is an arrangement of a sleeve, or socket for lengthening the leg.
 27:—are the screw holes on the sleeve 25.
 29:—is a strap for covering the joint of the foot and the leg. The necessary

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rods and strips for strength are employed inside and outside as usual, but are not shewn in the drawings. The leg is designed for cases in which the natural leg is amputated above the knee. The part which serves to receive the stump of the leg consists as usual of a leather socket provided with laces for tightening. The said socket is attached removably to the metal frame 4 which turns on the pivots 2. These may be fitted with ball bearings to cause easy movement, and prevent excessive wear. 5

The lower part of the leg consists of a the calf 3, which may be formed as a leather case the edges of which are stitched together. In the leg are enclosed the working parts and the spring action, thus preventing any danger of tearing the trowsers when walking. The motion of the leg on the pivots 2 is limited by the hook 5 placed at the lower part of the metal frame 4. 10

When the thigh is in a vertical position, the hook 5 engages with the edge of the stop 7 which projects from the interior of the lower leg and is connected to the bar 6 as shown in Figs. 1 and 2. When the leg is bent as shown in Fig. 2, the hook 5 engages with the fore part of the bar 6. To move the leg forward the interior spiral spring 8 is employed, the upper end of which is fitted to the leather strap 9 connected to the angular bar 4. The lower end of the spring is connected to the lug 10, attached to the inside of the leg, or in any other suitable way. The ankle joint is formed by a spring controlled universal joint which permits the bending of the foot in any direction. It consists of the metal cross plate 12, placed in the hollow of the foot 11. In the four arms of the cross plate are fitted the bolts 13 in a vertical position. These bolts bear upon the plate 14, fitted to the lower end of the leather case 3, and are encircled above and below it by the spiral springs 15 and 16. The bolts 13 are fixed with nuts 17. In the middle of the cross plate 12 is fixed the mushroom stud 18 in an upright position. Over it is an india rubber disc 19 which is fastened underneath the plate 14 in such a way, that the said plate and at the same time the leg may be moved in any direction on the stud 18, while the bolts 13 during this action slide through the plate 14 and their springs are compressed or extended as the motion demands. The foot which is fitted to the cross plate 12 by means of the screws 20 is formed inside of cork with an exterior leather cover 21. At the toe-joint, an acute angular cut 22 is formed in which two spiral springs 23 are placed to increase the flexibility of the foot. 15 20 25 30

The plate 14 may be joined to the calf or lower part of the leg 3 by means of angle plates 24 or in any other suitable way. 35

In the arrangement shown in Fig. 5 the lower part of the cover 3 is cut straight sided and fits into a kind of sleeve 25, into which the leg can be inserted and fixed by screws, while on the sides of the upper part 3 as on the cover 25 horizontal rows of screw holes 27 and if desired exterior and interior plates 28 are employed. 40

The foot terminates at its upper end in a socket which surrounds the lower end of the leg and is connected thereto by means of a strap 29., Figs. 1 and 2. By the use of leather instead of wood for the lower leg and by using ball bearings in the knee joint the weight of the leg is reduced by about 50%. This is obtained partly by the reduced weight of material and partly by lighter fittings. The use of leather enables the fittings to be both fewer and lighter. By using ball bearings any slackness of the pivot joints 2 is avoided and also any sound caused by the metal joints when walking. If the ball bearings become worn larger balls may be inserted to take up the wear. 45 50

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1:—An artificial leg distinguished by the following special features, namely:— that the upper and lower parts are connected together at the knee joint by a metal frame work and pivot joints fitted with ball bearings, said metal frame 55

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being fitted to the edges of the said parts, and by springs, straps, stops and the like, whereby the bending action of the knee is effected at will, and is limited by the hooks 5 and 7 and the bar 4, the said leg consisting of a leather case 3, and that the ankle joint is
5 formed by the following mechanism placed inside the foot, the whole forming an universal joint, namely, a cross plate 12, a mushroom stud 18, a metal plate 14 over said stud, and having an india-rubber disc 19 on its under side, said plate 14 being connected to the leg by angle plates 24 or the like, and being fitted with 4 bolts 13 having springs 15, 16, at each end, whereby the plate 14 and with it
10 the leg can move in any direction, substantially as herein described and set forth.
2:—In an artificial leg the adjusting arrangement shown in Fig. 5 consisting of a straight end and a socket or sleeve 25, substantially as herein described and set forth.

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Fig. 1

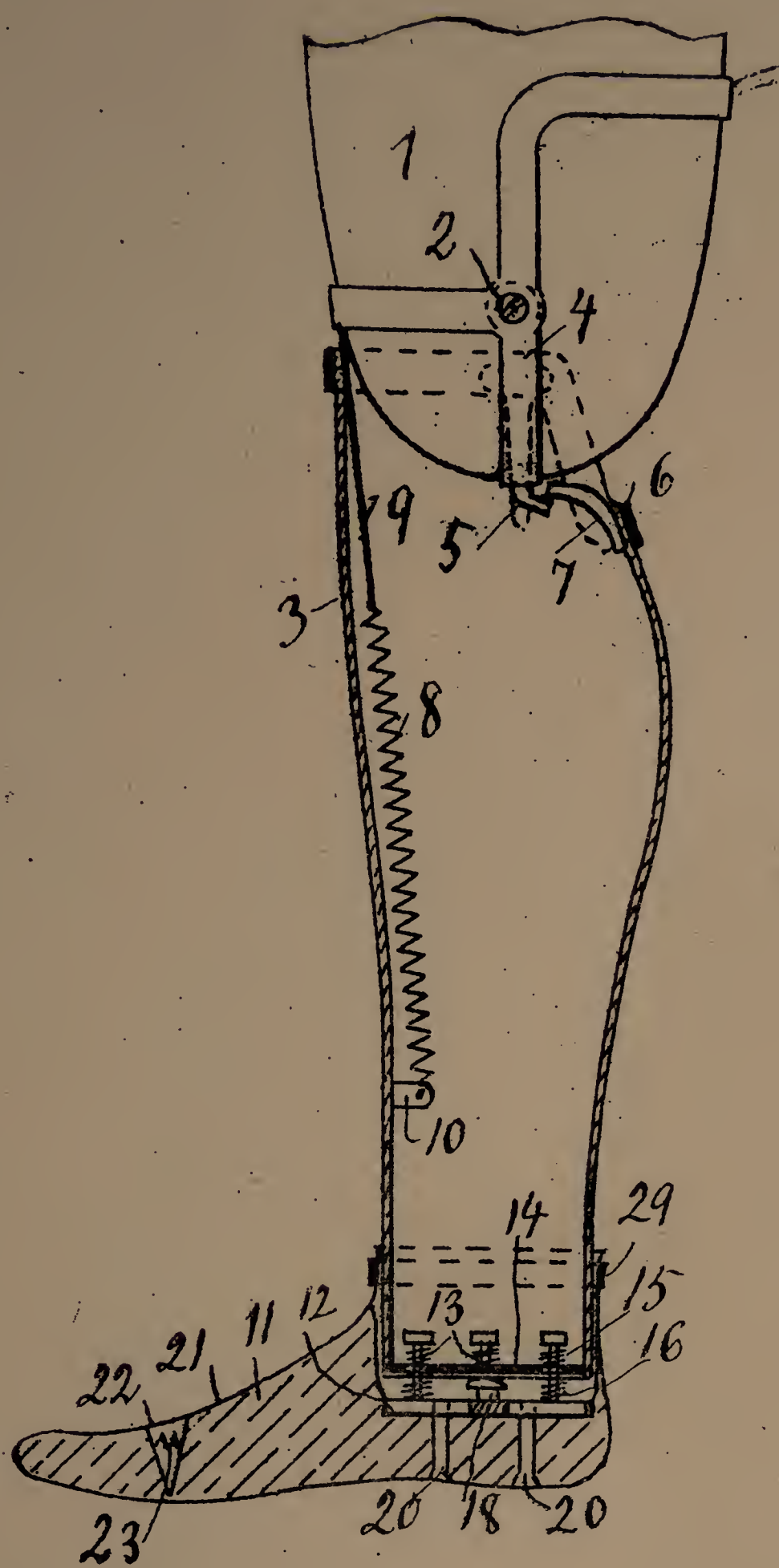


Fig. 2

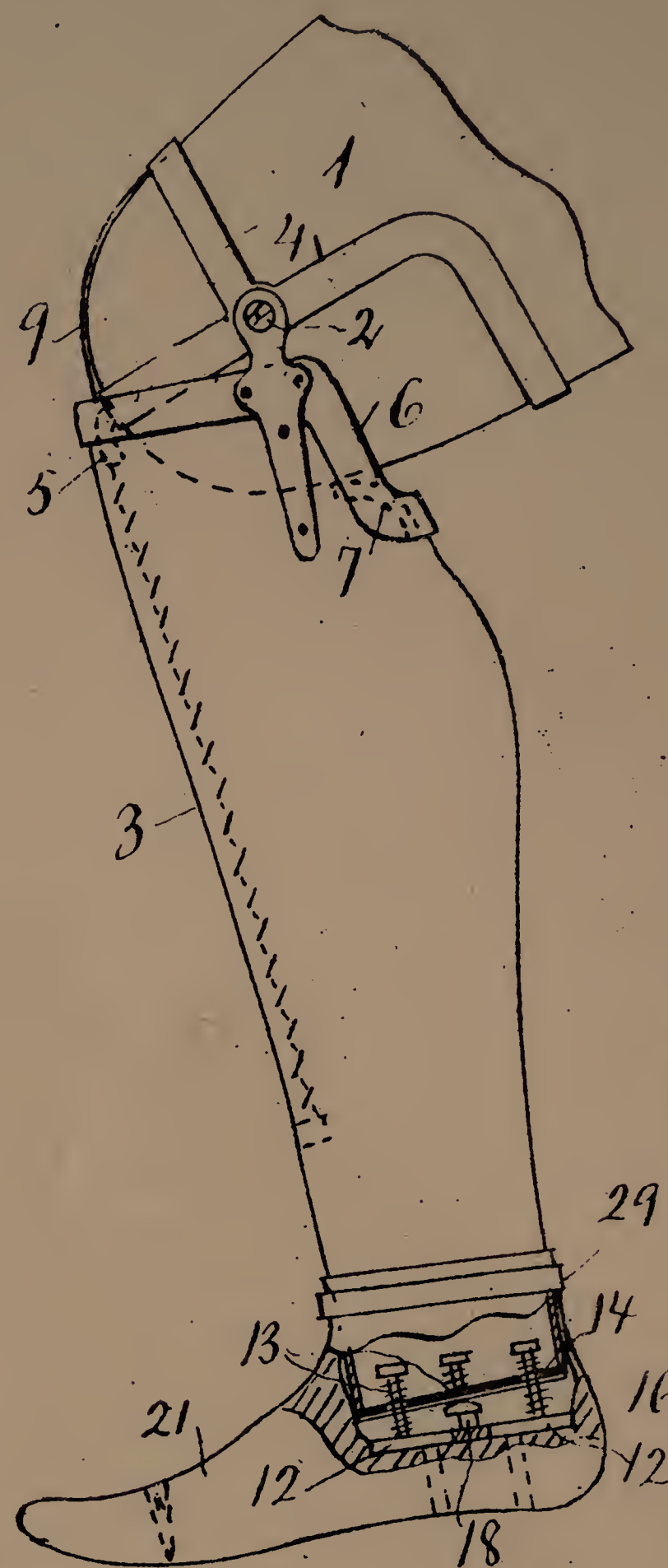


Fig. 3

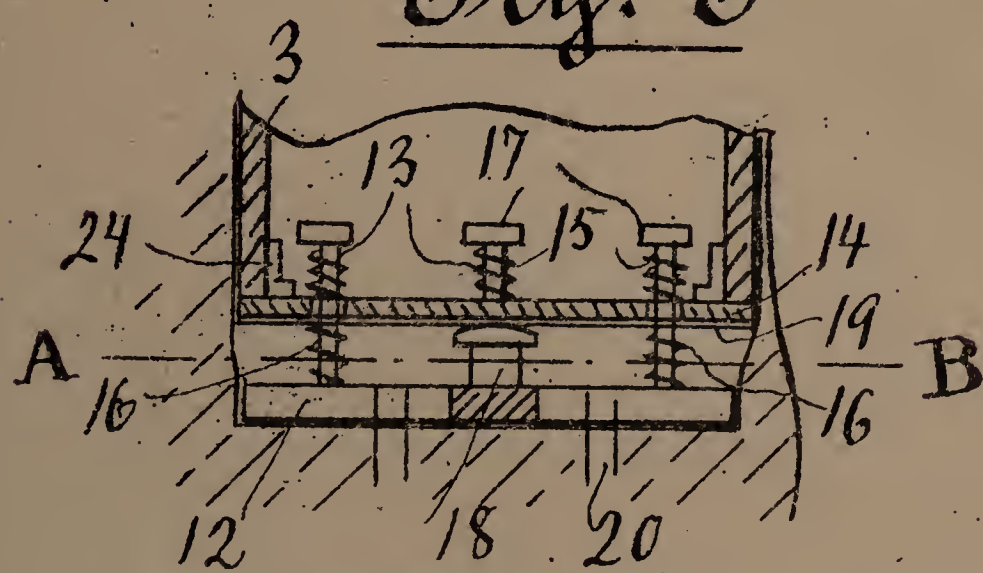


Fig. 4

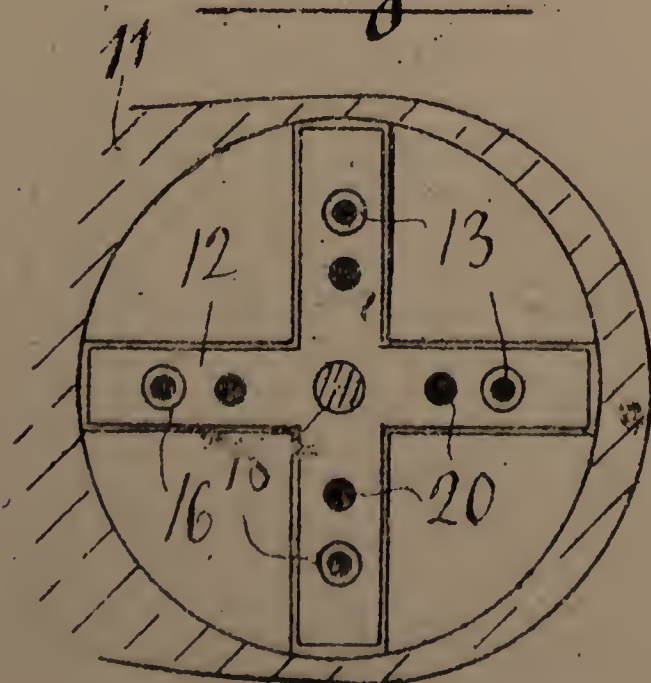
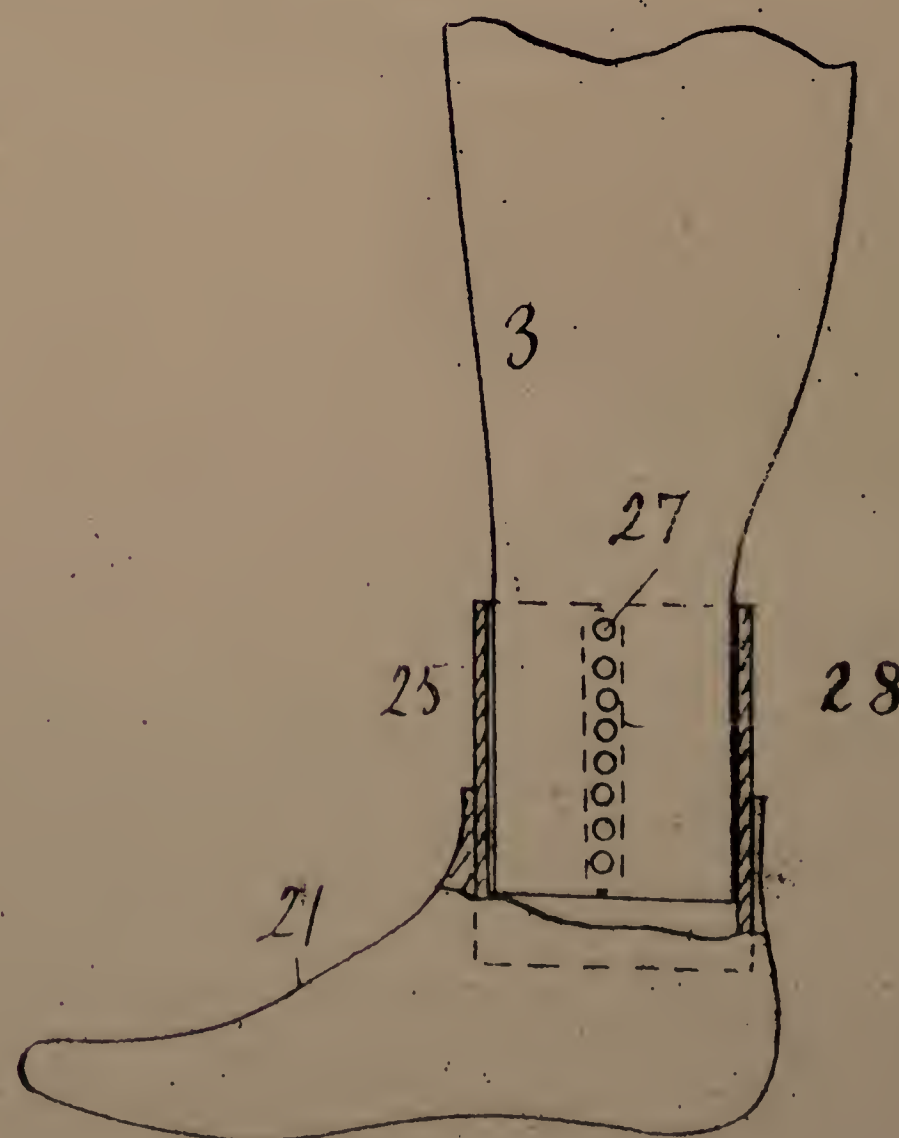


Fig. 5



[This Drawing is a reproduction of the Original on a reduced scale.]

